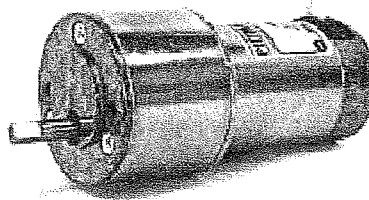




GM9213-2  
GM9413-2

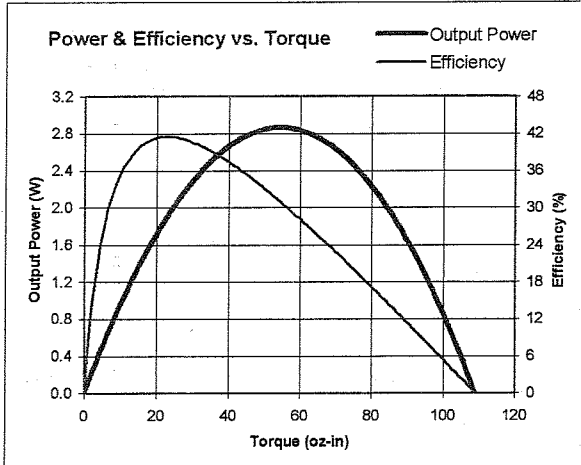
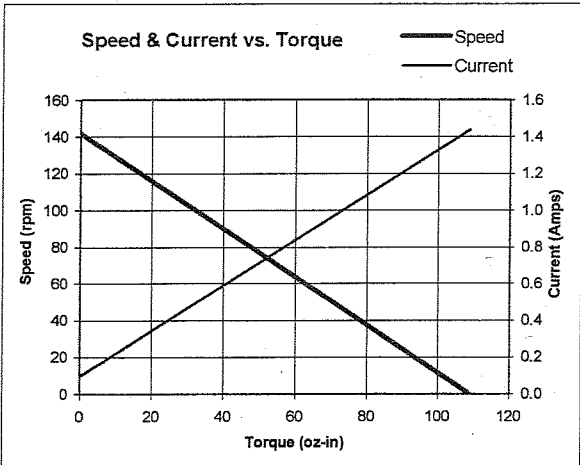
Lo-Cog® DC Gearmotor



Assembly Data	Symbol	Units	Value	
Reference Voltage	E	V	12	
No-Load Speed	S <sub>NL</sub>	rpm (rad/s)	142	(14.9)
Continuous Torque (Max.) <sup>1</sup>	T <sub>C</sub>	oz-in (N-m)	45	(3.2E-01)
Peak Torque (Stall) <sup>2</sup>	T <sub>PK</sub>	oz-in (N-m)	109	(7.7E-01)
Weight	W <sub>M</sub>	oz (g)	15.2	(432)
Motor Data				
Torque Constant	K <sub>T</sub>	oz-in/A (N-m/A)	5.60	(3.95E-02)
Back-EMF Constant	K <sub>E</sub>	V/krpm (V/rad/s)	4.14	(3.95E-02)
Resistance	R <sub>T</sub>	Ω	8.33	
Inductance	L	mH	6.17	
No-Load Current	I <sub>NL</sub>	A	0.10	
Peak Current (Stall) <sup>2</sup>	I <sub>P</sub>	A	1.44	
Motor Constant	K <sub>M</sub>	oz-in/√W (N-m/√W)	1.94	(1.37E-02)
Friction Torque	T <sub>F</sub>	oz-in (N-m)	0.50	(3.5E-03)
Rotor Inertia	J <sub>M</sub>	oz-in-s <sup>2</sup> (kg-m <sup>2</sup> )	3.9E-04	(2.8E-06)
Electrical Time Constant	τ <sub>E</sub>	ms	0.74	
Mechanical Time Constant	τ <sub>M</sub>	ms	14.7	
Viscous Damping	D	oz-in/krpm (N-m-s)	0.011	(7.6E-07)
Damping Constant	K <sub>D</sub>	oz-in/krpm (N-m-s)	2.8	(1.9E-04)
Maximum Winding Temperature	θ <sub>MAX</sub>	°F (°C)	311	(155)
Thermal Impedance	R <sub>TH</sub>	°F/watt (°C/watt)	66.4	(19.1)
Thermal Time Constant	τ <sub>TH</sub>	min	11.1	
Gearbox Data				
Reduction Ratio			19.7	
Efficiency			0.73	
Maximum Allowable Torque		oz-in (N-m)	175	(1.24)
Encoder Data				

- Included Features**
- 2-Pole Stator
  - Ceramic Magnets
  - Heavy-Gauge Steel Housing
  - 7-Slot Armature
  - Silicon Steel Laminations
  - Stainless Steel Shaft
  - Copper-Graphite Brushes
  - Diamond Turned Commutator
  - Motor Sleeve Bearings
  - Output Sleeve Bearing
  - Standard Gears

- Customization Options**
- Alternate Winding
  - Sleeve or Ball Bearings
  - Modified Output Shaft
  - Custom Cable Assembly
  - Special Brushes
  - EMI/RFI Suppression
  - Alternate Gear Material
  - Special Lubricant
  - Optional Encoder
  - Fail-Safe Brake



All values are nominal. Specifications subject to change without notice. Graphs are shown for reference only.

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